

## ABSTRACT

[0038] The present invention provides a catheter for detecting and treating diseased tissue in a blood vessel or other hollow body organ. The catheter comprises an elongated tubular catheter shaft having a distal end comprising a light transmission zone. A first fiber lumen in the catheter shaft contains a diagnostic optical fiber having a distal end terminating within the light transmission zone for emitting and receiving light through the light transmission zone. A diagnostic subassembly at the proximal end and in communication with the diagnostic optical fiber processes diagnostic light for use in connection with a diagnostic method for detecting diseased tissue. A second fiber lumen can be provided in the catheter shaft for containing a treatment optical fiber for delivering treatment light from a light source at the proximal end of the catheter shaft to the light transmission zone. The treatment optical fiber has a distal end terminating within the light transmission zone for emitting light for treatment of the diseased tissue. An occlusion balloon is positioned on the distal end of the catheter shaft adjacent to the light transmission zone and in fluid communication with an inflation lumen. One or more infusion ports formed on or near the light transmission zone and in fluid communication with an infusion lumen deliver infusion fluid to the hollow body organ.